# Northeast Temperate Network

# The Prioritization of NETN Vital Signs

The Inventory and Monitoring Program has a 3-phase planning and design process used to select vital signs and design park-based natural resource monitoring programs. The Northeast Temperate Network (NETN) completed Phase I in October 2003 and identified focal park resources and ecological processes, key stressors or agents of change, and key elements and processes representing ecological integrity within these natural resources.

**"continually improve the ability of the National Park Service to provide state-of-the-art management, protection, and interpretation of and research on the resources of the National Park System"
-National Parks Omnibus Management Act    1998**

During Phase II of the planning process the network prioritized and selected vital signs using a process of scientific peer review and developed specific monitoring objectives that can be addressed with the suite of selected vital signs. In order to select vital signs, four work groups based on major ecological systems present within NETN parks were established: terrestrial, aquatic, wetland and intertidal ecological systems. During the course of the past year, through a process of drafting, reviewing, and revising, vital signs were chosen that represent the priority natural resources and issues in NETN parks. The following list includes all of the high priority vital signs for the NETN:

**Acadia National Park**

## NETN Vital Signs

- Ozone
- Atmospheric Deposition and Stress
- Contamination
- Climate
- Phenology
- Shoreline change/sea level rise
- Water quality
- Water chemistry
- Nutrient enrichment
- Stream macroinvertebrates
- Fish-lakes and streams
- Breeding birds

- Early detection
    - Exotic plants
    - Exotic animals
- Vegetation
    - Intertidal
    - Wetland
    - Forest
    - High elevation
- Reptiles and amphibians
- White-tailed deer herbivory
- Visitor Usage
- Landscape Dynamics

# Counting the Critters: The USGS Mammal Inventory



**MABI Mammal Inventory**

The US Geological Survey (USGS) recently completed the field work for a mammal inventory at Acadia NP, Marsh-Billings-Rockefeller NHP, Minute Man NHP, Morristown NHP, Roosevelt-Vanderbilt NHS, Saint-Gaudens NHS, Saratoga NHP, Saugus Iron Works NHS, and Weir Farm NHS. The primary objective of the inventory was to document 90% of the extant mammal species found within park boundaries. The information gathered through the inventory will augment existing information on the occurrence of terrestrial mammal species at NETN parks. Secondary objectives include documenting the distribution and abundance of species of special concern to each park and developing a better understanding of mammalian communities and interactions within the local environment.



**Black Bear at Saint-Gaudens NHS**

The sampling design for the inventory established a series of sampling sites at which multiple sampling methods were implemented. Remote cameras, track plates, hair catchers, and live traps were deployed at sample sites to detect as many mammal species as possible. Remote cameras were fitted with infrared sensors that were triggered when animals were drawn to a baited spot in the photo zone (see photos), the sooted track plates were set in cubby boxes with covers on the top and sides and one end open for entrance, and the haircatchers were mounted on trees for small and medium-sized carnivore hair sampling.

The USGS scientists conducted the first round of mammal sampling during the winter months of 2003-2004. During this portion of the inventory, the array of remote cameras, track plates, and hair catchers were sampled for two weeks. These same sites were revisited during the summer months of 2004.

The USGS scientists completed the mammal inventory in October 2004. Preliminary results indicate that many of the network parks support a high diversity of mammal species. To date, over 50 rolls of film have been processed from the remote cameras, with one station from MIMA having eight different species detected including: red fox, grey fox,



**Fisher at Minute Man NHP**

coyote, gray squirrel, cottontail, skunk, cat, and raccoon. A bobcat was captured on film at SARA and a black bear was detected at MABI when the bear attempted to take the chicken wing from a hair sampler. Other species detected on film include white-tailed deer, snowshoe hare, opossum, porcupine, black bear, and fisher. In addition to these species, the USGS mammal inventory also detected the following mammal species present in network parks: striped skunk, red squirrel, mink, weasel, moose, flying squirrel, a variety of small mammals (mice, voles, and shrews), and domestic/feral cats and dogs. Preliminary results show that raccoons top the list for most abundant mammal.

# ...Vital Signs

We prioritized and selected potential Vital Signs (VS) using a sequential peer review process. A core science team of six staff (representing expertise in forest ecology and vegetation science, aquatic ecology, wetland ecology, amphibians, ornithology, biogeochemistry, conservation biology, and ecological data management) first drafted a list of over 100 potential VS representing the three major categories identified in the conceptual models. This was a comprehensive list — targeted to ecological systems present within NETN— that spanned spatial, temporal, and biological scales of organization. We reviewed and prioritized this list with a multi-stage process, comprised of 1) initial review by the NETN core science team; 2) external peer-review by a group of more than 40 scientists and park managers at the Vital Signs Selection Workshop; 3) review by the NETN Technical Steering Committee, composed of both external scientists and NPS staff; 4) additional review by NETN core science team, and 5) National I&M Program Review and Approval. Phase II for NETN was completed in October 2004 and received a positive review from the national I&M program.

# Herp Inventory Results

Herpetologists from the Wildlife Conservation Society (WCS) inventoried amphibians and reptiles in 7 network parks and recently completed the final report for Acadia National Park in Maine. The inventory used anuran call counts, egg-mass counts, time-constrained search, coverboards, turtle trapping, minnow trapping, and drift fence arrays. Eighteen amphibian and reptile species were documented of the 22 that were believed to historically inhabit Acadia. Of these 18 species, six were frog/toad, five salamander, two turtle, and five snake.


Bill Gawley

**Green Frog**

Wetlands had the highest species richness in addition to the majority of individuals recorded. The species that were most abundant in each taxonomic group were spring peeper, spotted salamander, painted turtle, and common garter snake. The four-toed salamander, listed as a *Species of Special*

*Concern* by the Maine Department of Inland Fisheries and Wildlife, was found at nine locations. This is notable because this species was historically only recorded at one site. Four species were not found that have been formerly documented in the park. Historically the grey tree frog and musk turtle were rarely encountered, but not encountered at all during this survey. However, of more concern is the absence of the leopard frog and northern dusky salamander, both of which were historically common in the park. The results of the study show an apparent decline and extirpation of two amphibian species.

We are presently working with WCS to complete the remaining reports for the other parks and will distribute these as soon as they are available.


VINS

**Painted Turtle**

# NETN Bird Inventories

The network collaborated with two cooperators to inventory park avi-fauna. The Vermont Institute of Natural Science (VINS) conducted an avian inventory at MABI and SAGA and the University of Rhode Island conducted avian inventories in BOHA, MIMA, SAIR, WEFA, ROVA, SARA, and MORR.

The main objective for the VINS avian inventory at MABI was to help guide the forest management plan that is being developed for the park. MABI is the first park in the National Park Service that focuses on conservation history. The 555 acre forested park is being managed as a working landscape, with plans for sustainable forestry practices and educational forestry demonstrations. The results of the inventory will be used to inform park managers regarding the biological resources that occur within the park and how management practices might affect the status and distribution of these resources. The methods used for the inventory were point counts, audio playback surveys, and area searches. During the 2-year project, 91 bird species were detected. Seventy two species were confirmed or suspected of breeding within the park or adjacent lands, 16 were considered local breeders that may nest occasionally or in the future on park lands, while 3 species were strictly transients.

The inventory at SAGA provides park managers with comprehensive and science based information about breeding bird populations that occur within the park boundaries. The landscape at SAGA is a mix of natural and cultural, with ongoing management activities directed to maintain the cultural landscape practices influencing some natural resources. The methods used for the inventory were the same as used at MABI. A total of 85 bird species were detected during the 2-year project. Of these, 62 were confirmed or suspected of breeding within the park, 21 were considered local breeders that may nest occasionally or in the future on park lands, and 2 species were strictly transients.

Carol Trocki

**Female Common Eider**

# ...Bird Inventory

Cooperators from the Department of Natural Resources Sciences at the University of Rhode Island conducted an avian survey to determine the spatial distribution and abundance of birds in BOHA, MIMA, SAIR, WEFA, ROVA, SARA, and MORR during 2002 and 2003. The survey focused on breeding, diurnal landbirds and used point counts to detect species and estimate relative abundance.

**BOHA**: 135 species were detected, of which 50 species were waterbirds, waterfowl, or shorebirds and 85 species were primarily terrestrial. There were approximately 15 pairs of American Oystercatchers, a species that Partners in Flight (PIF) lists as a species of high continental conservation priority. In addition, PIF also lists the American Black Duck as a species experiencing high regional threats. Other species of concern that were found in the park are Common and Least Terns, Baltimore Orioles, and Bobolinks.

**MIMA**: 62 species were detected. PIF lists nine of the breeding species in the park as priority species. Of these species the Wood Thrush, Blue-winged Warbler, Scarlet Tanager, and Baltimore Oriole are listed as high priority with a high level of responsibility for the Southern New England region (SNE). The Eastern Wood-Pewee, Eastern Towhee, and Rose-breasted Grosbeak are also of high priority, but have a low responsibility in this region. Chimney Swift and Bobolink are of conservation interest, but are not believed to be breeding in the park.

**SAIR:** 37 species were detected. Of these, 3 are priority species: Baltimore Oriole, Rose-breasted Grosbeak, and Chimney Swift.

**WEFA:** 65 species were detected. Of the species breeding in the park, 7 are priority species: Wood Thrush, Louisiana Waterthrush, Scarlet Tanager, Hairy Woodpecker, Eastern Wood-Pewee, Black-and-White Warbler, and Barn Owl. The first three have high responsibility in Southern New England, the next three are low, and the Barn Owl is listed as endangered by the State of Connecticut.

**ROVA:** 81 species were detected. 6 breeding species are listed as priority species: Wood Thrush and Worm-Eating Warbler are of high continental priority; Eastern Wood-Pewee, Scarlet Tanager, and Baltimore Oriole are of high regional priority; and Gray Catbird is a species on the U.S. National Watch List.

**SARA:** 73 species were detected. Of the breeding species, 5 are listed as conservation priorities. The Field Sparrow and Wood Thrush are listed as continental conservation priority. Eastern Wood-Pewee, Eastern Towhee, and Wood Duck are high


Carol Trocki

**Least Tern chick and egg**

regional priority.

**MORR:** 72 species were detected. Wood Thrush, Worm-Eating Warbler, and Louisiana Waterthrush are high continental priorities; Eastern Wood-Pewee, Scarlet Tanager, Eastern Towhee, and Balitmore Oriole are high regional priority.

The final reports for the avian inventories will be available in early 2005.

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# Vegetation Mapping



**Roosevelt-Vanderbilt NHS**



**Saratoga NHP**

Vegetation Mapping for NETN is a cooperative effort with NatureServe, USGS, NY Natural Heritage, CT Natural Heritage, and North Carolina State University. Acadia NP was completed in 2003 and all final products are available. Draft photo mosaics are completed for the following parks: MABI, MIMA, MORR, ROVA, SAGA, SARA, and WEFA. Field work is finished in these parks, except for MABI and SAGA, which will be completed in 2005. The final reports will be available in 2006. The remaining parks, APPA, BOHA, and SAIR, have scoping reports in progress at this time. Heritage ecologists conducting the field work were pleasantly surprised by some of the communities they found in parks. For example, the first significant floodplain forest along the Hudson River north of Albany, an area where little natural community surveying has been done, was documented by NY Natural Heritage during the vegetation mapping project at SARA. The floodplain was moderately large with relatively few invasive, non-native plants. ROVA data suggests that there may be an old-growth remnant patch of oak-tulip tree forest. (see photos)

| PARK | SCOPING | PHOTO MOSAIC | FIELD WORK | VEG MAP |
|------|---------|--------------|------------|---------|
| ACAD | Complete | Complete | Complete | Complete |
| APPA | In Progress | | | Feasibility 2006 |
| BOHA | In Progress | | | 2007 |
| MABI | Complete | Draft Complete | 2005 | 2006 |
| MIMA | Complete | Draft Complete | Complete | 2006 |
| MORR | Complete | Draft Complete | Complete | 2006 |
| ROVA | Complete | Draft Complete | Complete | 2007 |
| SAGA | Complete | Draft Complete | 2005 | 2006 |
| SAIR | In Progress | | | 2007 |
| SARA | Complete | Draft Complete | Complete | 2007 |
| WEFA | Complete | Draft Complete | Complete | 2008 |